Sustainability of Turkish Current Account Deficit in the Post-Crisis Period[1]

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Abstract
Persistent rise in current account deficit (CAD) and the way that the country finances its CAD constitutes one of the major sources of external fragility in Turkey. Therefore, sustainability of CAD has become one of the critical issues for at least two decades. In this study, intertemporal budget constraint model was used to examine the sustainability of Turkish CAD after the financial crisis in 2001. Unit root and cointegration techniques were employed in the analysis. The main result of the study indicates that Turkish CAD is sustainable in a weak sense for the post-crisis period.

Keywords: Current account deficit, sustainability, intertemporal budget model, Zivot-Andrews unit root test, cointegration, Turkey

JEL Classification Codes: F32

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Introduction

Current account imbalances are of interest for the last three decades, since they are considered as important indicators of economic fragility. Most of the financial crises in 1990s and 2000s reveal the key role of persistent and increasing current account deficit (CAD) in economic vulnerability. The adverse macroeconomic changes caused by the persistent CAD attracts policy makers, investors and economists (Irandoust and Ericsson, 2004, p.49; Baharumshah et al., 2003, p.466).

Temporary CAD is not necessarily a problem for the economy, as long as it reflects the reallocation of capital to the country where capital is most productive. Hence, current account deficit is desired up to a point as it boosts capital inflows to a country. However, as mentioned in Baharumshah et al. (2003, p.466); Apergis et al. (2000, p.599) and Choon-Seng and Villanueva (2000, p.3), persistent CAD may have serious effects such as, increase in domestic interest rates, accumulation of external debt, financial crises triggered by high interest rates and rapid depreciation of exchange rates, higher government budget deficits, decrease in savings, imports exceeding exports, and excessive burden on future generations by lowering the standards of living.

These serious effects on the economy raise the question of whether the CAD is sustainable or not. During the last decade, the concept of

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sustainable current account has become an important issue in the economics literature. In principle, an economy will be able to sustain deficits as long as it can raise the necessary funds by borrowing (Kalyoncu, 2005, p.1). Even though most of the developing countries including Turkey, mainly relied on international borrowing to finance their CAD and it might be appropriate in the short run. After a phase that the CAD becomes persistent, borrowing will inevitably imply slowdowns in investments, consumption and growth (Christopoulos and Leo-Ledesma, 2010, p.442), and an increase in the CAD will become a vicious circle.

CAD sustainability refers to whether an economy is capable of meeting its intertemporal budget constraint in the long run without a drastic change in private-sector behavior or policy changes, such as a sharp depreciation or reduction in the government expenditures.

Determining whether a country's current account is sustainable is not an easy task, as the notion of sustainability is related to complex macroeconomic and political-economy issues, but it is critical (Kim, Min, Hwang and McDonald, 2009, p.164). Sustainability of the CAD is crucial, because a sustainable current account is consistent with the sustainability of external debts, and the sustainability of CAD is consistent with the intertemporal model of the current account.

In order to analyze the long-run sustainability of the current account, the countries intertemporal budget constraint must be questioned. Intertemporal model investigates the country's ability to repay its external debt. To fulfill the intertemporal budget constraint, the present discounted value of future trade surpluses must be equal to the present value of its foreign debt (Milesi-Ferretti and Razin, 1996, p.2).

CAD is often and highly blamed for economic fluctuations or crises. Corsetti et al. (1998) denotes that, on the whole, those countries hit hardest by currency crises were those which had persistent CAD. The wider the current-account deficit and the heavier the reliance on short-term borrowing to finance it, the more disruptive the dislocations when inflows dry up and the more difficult the necessary adjustments (Bordo, Eichengreen, Klingebiel and Martinez-Peria, 2001, p. 73). As well as the economic crises in 1994, 2000, 2001 and 2008 in Turkey; the CAD is accepted among the causes of many economic crises, such as in Chile and Mexico (early 1980s), the UK and Nordic countries (late 1980s), Mexico and Argentina (mid 1990s) and East Asian countries (late 1990s) (Baharumshah et al., 2003, p.466).

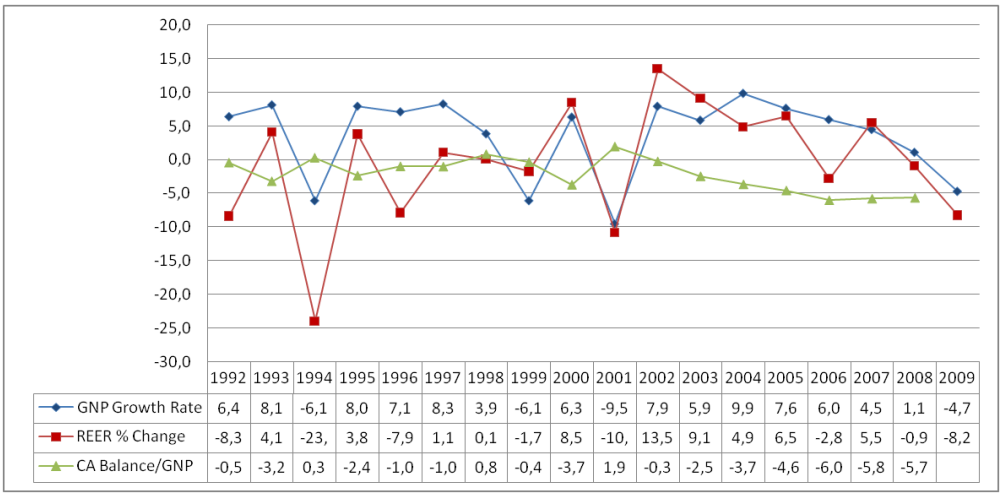
As the sustainability of CAD is an important indicator of an economy's vulnerability, the main goal of this paper is to reveal the status of a developing country by analyzing the sustainability of the CAD for Turkey. To identify whether the Turkish CAD is sustainable or not, the long-run relationship between the Turkish exports of goods and services and imports of goods and services including the net current transfers and net interest payments was examined by using the theoretical model advanced by Husted (1992). Zivot and Andrews (1992) unit root test and Johansen (1988) cointegration analysis were employed for the monthly data for the period 2002:01-2010:12. The selected data period includes the post-2001 crisis period of Turkey, which was the most devastating crisis in the country's economic history, and the data also involves the period of global financial crisis in 2008.

The organization of the paper is as follows: In Section 2, the Turkish CAD is discussed. In section 3, literature on current account sustainability is summarized. Section 4 describes the methodology, and Section 5 summarizes the results of the empirical analysis. Finally, Section 6 concludes with the remarks and policy implications for the sustainability of the Turkish CAD.

Turkish Current Account Deficit

The capitalist system is trying to overcome the decline in capital profitability by financialization in the era of capitalism and globalism,. Declining profits during the 1970s resulted in financial capitalism emerging the neoliberal age. Consequently finance capital became the dominant actor.

In Turkey, neoliberal macroeconomic policies were adapted to the economic system after 1980. The Turkish economy became fragile by the financial deregulations in 1989 causing some devastating crises in 1994, 2000, 2001 and 2008. The growth mainly financed by speculative portfolio investments was the most important characteristic of this period. In such, CAD became a major problem for the economic structure in Turkey. As it is seen in Figure 1, major determinant of the growth in Turkey is CAD. That is to say import is the main input as a result of real exchange rates, namely the key price.



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GNP Growth Rate	6,4	8,1	-6,1	8,0	7,1	8,3	3,9	-6,1	6,3	-9,5	7,9	5,9	9,9	7,6	6,0	4,5	1,1	-4,7
REER % Change	-8,3	4,1	-23,	3,8	-7,9	1,1	0,1	-1,7	8,5	-10,	13,5	9,1	4,9	6,5	-2,8	5,5	-0,9	-8,2
CA Balance/GNP	-0,5	-3,2	0,3	-2,4	-1,0	-1,0	0,8	-0,4	-3,7	1,9	-0,3	-2,5	-3,7	-4,6	-6,0	-5,8	-5,7	

Figure 1: CAD, GNP Growth Rate and REER.

In 1990s, CAD/GDP ratio was only 1 %, however after consequent crises it raised to 6% in the mid-2000s. Figure 2 shows the path of CAD/GDP ratio and points out a continuous growth in the CAD of Turkey.

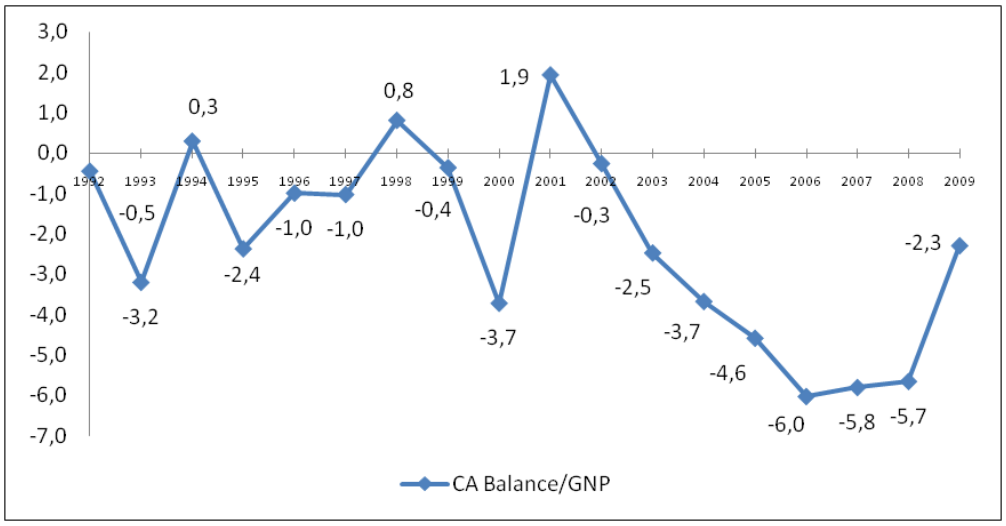


Figure 2: Current Account GDP Ratio, 1992-2009

In Figure 2, it is clearly seen that CA/GDP ratio is declining since 2001, and it is higher than the critical barrier of 5% for sustainability since 2006, with a ratio of 6.1%.

As table 1 reveals, the large and persistent CAD mainly results from trade deficits during 2000s because of too much dependency of industrial sectors on imports. The Customs Union with EU and overvalued national currency, driven by large inflows of the short-term speculative money attracted by high real rate of return on Turkish securities, play the key roles in this process. For example, according to Turkish daily newspaper Akşam (July 13, 2011), 76 sectors have been highly dependent on the imports from China and 30 sectors from Germany. Also, same newspaper argues that over 1000 sectors slightly dependent on the imports from these two countries.

Table 1: Balance of Payments, 2002-2010

(Million US $)	2002	2003	2004	2005	2006	2007	2008	2009	2010
Current Account	**-626**	**-7515**	**-14431**	**-22309**	**-32249**	**-38434**	**-41959**	**-13991**	-48557
International Trade Balance	-6390	-13489	-22736	-33080	-41056	-46852	-53021	-24850	-56320
Services Balance	7885	10511	12797	15156	13555	13283	17311	16749	14208
Net Revenues	-4554	-5557	-5609	-5839	-6656	-7108	-8362	-8189	-7816
Current Transfers	2433	1020	1117	1454	1908	2243	2113	2299	1371
Capital and Financial Account	**1384**	**3065**	**13360**	**19485**	**32064**	**36677**	**37256**	**8923**	44229
Capital Account	0	0	0	0	0	-8	-60	-42	-34
Financial Account	1384	3065	13360	19485	32064	36685	37316	8965	44263
Direct Investments	939	1222	2005	8967	19261	19941	16955	6856	7122
Portfolio Investments	-593	2465	8023	13437	7415	833	-5014	227	16259
Other Investments	7191	3425	4156	14928	11502	23943	24318	1993	33681
Reserve Assets	-6153	-4047	-824	-17847	-6114	-8032	1057	-111	-12799
Net Errors and Omissions	-758	4450	1071	2824	185	1757	4703	5068	4328

Table 1 represents the balance of payments for the period 2002-2010. As stated above, the main reason of the persistent CAD in Turkey is the trade deficits. Table 1 also reveals that the main source of financing the CAD in Turkey is the short-term speculative money flows which raise the question of the CAD sustainability, since it

represents this type of financing creates debt. This part of the paper is heavily based on Özer (2011).

Large and persistent CAD has created serious problems for the Turkish economy, particularly in the recent years. Foreign trade deficit is the main cause of the current accounts deficit, and it has been very effective in the emergence of several financial-economic crises that Turkey has suffered (particularly in 1994 and 2000). Ironically with a large and persistent CAD; budget deficits/GDP, public debt/GDP and interest payments on domestic debt/GDP ratios are low along with a relatively low real interest rate; low inflation rate and high growth rate.

The concern is often discussed that gradually increasing CAD may lead to similar crises. It is important to determine the sustainability of CAD and to take appropriate measures to overcome the excessive and risky effects of persistent imbalances.

Literature Review

Since the oil price crisis in 1973, sustainable CAD has been increasingly investigated by economists for various countries, including developed and developing countries, as well as the transition economies.

In the international trade literature, there are quite a number of studies that approach to the sustainability of current accounts deficit around a long-run relationship between exports and imports. Empirical research embraces all types of unit root tests and cointegration techniques to explain the intertemporal budget constraint for different countries. These studies include Raybaudi et al. (2004), Matsubayashi (2004), Baharumshah et al. (2003), Arize, (2002), Apergis et al. (2000) and Husted (1992), among others.

This section summarizes the important studies of the related literature in Table 2.

Table 2: Literature Review on CAD

Author	Publ. Year	Summary
Ahmed and Rogers	1995	- 1889-1992 - US and UK - Unsustainable
Apergis, Katrakilidis and Tabakis	2000	- 1960-1994 period - Greece - - Sustainable
Arize	2002	- 1973-1998 - 50 countries - Johansen cointegration - 31 countries sustainable
Baharumshah, Lau and Fauntas	2003	- 1961-1999 period - Four ASEAN countries (Indonesia, Malaysia, the Philippines and Thailand) - Malaysia unsustainable
Barışık and Çetintaş	2006	- 1987-2003 period - Turkey - Unsustainable
Chen	2011	- 1970-2009 - 8 OECD countries - Unit root tests, Markov switching - Belgium sustainable
Choon-Seng and Villanueva	2000	- 1970-1997 period - Indonesia, Malaysia and the Philippines - sustainable
Christopoulos and Leon-Ledesma	2010	- 1960-2008 - The US - STAR unit root test - Sustainable
Dülger and Özdemir	2005	- 1974-2001 - G-7 countries - Fractional unit root test - Japan unsustainable
Green, Holmes and Kowalski	2000	- 1991-1998 period - Poland - Sustainable
Herzer and Nowak-Lehmann	2006	- 1975-2004 - Chile - Unit root test, Gregory-Hansen cointegration test with structural breaks - Sustainable
Husted	1992	- 1967-1989 period - US - sustainable
İsmail and Baharumshah	2008	- 1960-2004 - Malaysia - Unit root and cointegration tests - Sustainable
Kalyoncu	2005	- 1987-2002 period - Turkey - sustainable
Kim, Min and McDonald	2009	- 1981-2003 - Indonesia, Korea, Malaysia, the Philippines and Thailand - Non-linear unit root test - Sustainable
Konya	2008	- 1993-2006 - Czech Republic, Hungary and Slovenia - Unit root and cointegration tests - Slovenia not sustainable
Liu and Tanner	2001	- 1970-1990 - G-7 countries - Unit root test with and without breaks - Canada unsustainable
Matsubayashi	2005	- 1975-1999 - The US - Unit root and cointegration tests - Sustainable
Narayan and Narayan	2005	- 1960-2000 - 22 least developed countries - ARDL cointegration test - 6 countries sustainable
OğuşBinatlı and Sohrabji	2008	- 1992-2004 - Turkey - Unit root and cointegration tests - Unsustainable
Ongan	2008	- 1980-2005 period - Turkey - Unsustainable
Önel and Utkulu	2006	- 1970-2002 - Turkey - Zivot-Andrews unit root test, Gregory-Hansen cointegration test - Weakly sustainable
Polat	2011	- 2000-2010 period - Turkey - Weakly sustainable
Raybaudi, Sola and Spagnolo	2004	- 1970-2002 - Argentina, Brazil, Japan, the UK and the US - Unit root test - Argentina and US not sustainable
Wu, Fountas and Chen	1996	- 1974-1994 period - Canada and US - Unsustainable
Yücel and Yanar	2005	- 1964-2003 period - Turkey - Unsustainable

Studies investigating the sustainability of the CAD for different countries by the intertemporal approach have found controversial results, even for the same countries for different periods.

The intertemporal approach is a process of modeling budget constraints of an individual, with its borrowing and lending position in an open economy, modified for the current account balance by considering the export and import volume. The intertemporal model is explained in the section below.

Theoretical Background

The cointegration between a country's exports and imports, which together nearly constitute the complete current account, indicates that the current account has short lasted and can be sustained in the long-run. In other words, countries that have provided international budget constraints and the correct long term macroeconomic policies have succeeded in balancing exports and imports in the long term (Herzer and Nowak-Lehmann, 2006, p.981).

In this study, we have used the theoretical model of Hakkio and Rush (1991) developed by Husted (1992) to test the sustainability of current account deficit. The intertemporal approach simply explains the long-run relationship between exports and imports.

The model starts with the budget constraint of an individual who is able to borrow and lend freely in the international market. The current-period budget constraint of this individual is:

$$C_0 = Y_0 + B_0 - I_0 - (1 + r_0)B_{-1} \quad (1)$$

where C_0 denotes current consumption; Y_0 represents output; I_0 represents investment; r_0 represents the world interest rate; B_0 represents international borrowing; and $(1 + r_0)B_{-1}$ represents the initial debt of the individual, corresponding to the country's external debt.

Since Equation (1) must hold for the whole period, the budget constraints for every period can be used to calculate the intertemporal budget constraint for the economy formulized as:

$$\mathrm{B}_0 = \sum_{t-1}^{\infty} \delta_t TB_t + \lim_{n \to \infty} \delta_n B_n \quad (2)$$

where $TB_t = EX_t - MM_t = Y_t - C_t - I_t$ represents the trade balance in period t, EX_t and MM_t represents exports and imports respectively, $\delta_t = \prod_t^{s-1} \beta_s$, where $\beta_s = 1/(1 + r_s)$ and δ_t is the discount factor. The

crucial element in Equation 2 is the last term, $\lim_{n\to\infty}\delta_n B_n$, where the limit is taken as $n\to\infty$. When the limit term is different than zero, if B_0 is positive, then the country is "bubble financing" its external debt, and if B_0 is negative the country is making Pareto-inferior decisions; welfare could be raised by lending less (Husted, 1992, p.160).

Assuming that the world interest rate is stationary with unconditional mean r, Equation 1 may be expressed as:

$$Z_t + (1+r)B_{t-1} = EX_t + B_t \quad (3)$$

where $Z_t = MM_t + (r_t - r)B_{t-1}$. Solving Equation 3 by forward substitution, Husted (1992) obtains the following relationship:

$$MM_t + r_t B_{t-1} = EX_t + \sum_{j=0}^{\infty}\phi^{j-1}\left[\Delta EX_{t+j} - \Delta Z_{t-j}\right] + \lim_{j\to\infty}\phi^{t+j}B_{t+j} \quad (4)$$

where $\phi = 1/(1+r)$ and Δ denotes the first difference operator. The left-hand side of Equation 4 represents spending on imports as well as interest payments on foreign debt. Subtracting EX_t from both sides of Equation 4 and multiplying the result by (−1), we observe that the left-hand side of Equation 4 represents the current account of an economy. Furthermore, by assuming the limit term that appears in Equation 4 equals to zero and adding the residual term to the equation, the following regression model is obtained:

$$EX_t = \alpha + \beta MM_t^{*} + \varepsilon_t \quad (5)$$

where under the null hypothesis of the economy is satisfying its intertemporal budget constraint, $\beta = 1$ and ε_t would be stationary. If EX and MM are non-stationary, then they are cointegrated. This means, the necessary condition (weak form) for the economy to satisfy its intertemporal budget constraint is the existence of a stationary error structure, that is, ε_t in Equation 5 should be an $I(0)$ process. On the other hand, failure to detect movement interactions between exports and imports, it provides evidence against sustainability of the current account as it denotes that the economy fails to satisfy the intertemporal budget constraint.

As shown by Hakkio and Rush (1991), if EX and MM are $I(1)$, then under the null hypothesis of the economy is satisfying its intertemporal budget constraint, they are cointegrated. Based on the results of the cointegration analysis between EX and MM, we can draw some conclusions concerning the sustainability of CAD:

- If EX and MM are not cointegrated, then the current account is not sustainable,

- If EX and MM are cointegrated with $\beta = 1$, then the current account is sustainable,
- If EX and MM are cointegrated with $\beta < 1$, then economy's imports are growing faster than the exports, and the current account may not be sustainable.

The necessary and sufficient condition (strong form) for the intertemporal budget constraint model is the existence of a vector (α, β) such that ε_t is a stationary process and $(\alpha, \beta) = (0,1)$. In other words, if exports and imports are cointegrated with vector $b = (1, -1)$ then the economy is said to satisfy its strong form of the intertemporal budget constraint in the long run, and the current account is strongly sustainable.

Empirical Analysis

In empirical analysis, to test the sustainability of Turkish CAD, we first determine the degree of the integration of the variables by using Zivot-Andrews unit root test because of the clear structural breaks in the data provided by Figure 2. And then, we perform Johansen cointegration test to examine the sustainability of CAD.

Unit Root Tests with Structural Breaks

As is implied in Zivot and Andrews (1992), if the presence of structural breaks is neglected, then the results of unit root tests will not be significant. Therefore, we use Zivot-Andrews ZA test to examine the stationarity of variables in the study. To test the degree of integration between the variables with structural breaks by using ZA test, one can use the following three equations:

$$\Delta y_t = c + \alpha y_{t-1} + \beta t + \gamma DU_t + \sum_{j=1}^{k} d_j \Delta y_{t-j} + \varepsilon_t \quad (6)$$

$$\Delta y_t = c + \alpha y_{t-1} + \beta t + \theta DT_t + \sum_{j=1}^{k} d_j \Delta y_{t-j} + \varepsilon_t \quad (7)$$

$$\Delta y_t = c + \alpha y_{t-1} + \beta t + \gamma DU_t + \theta DT_t + \sum_{j=1}^{k} d_j \Delta y_{t-j} + \varepsilon_t \quad (8)$$

Model A in Equation 6 assumes a breakdown in level series, model B in Equation 7 assumes a breakdown in trend, and model C in Equation 8 assumes a structural break both in level series and in trend. The break points are the data points corresponding to the minimum t-statistics. If the t-statistics are higher than Zivot and Andrews (1992) critical values in absolute terms, the null hypothesis of non-stationarity will be rejected.

DU_t and DT_t representing the dummy variables for the shifts in the constant term and trend respectively, and TB representing the break point in the series, the values for the dummies are as follows:

$$\left.\begin{array}{l} DU_t = 1 \\ DT_t = 1 - TB \end{array}\right\} \text{ if } t > TB \text{ , 0 otherwise;}$$

Since model C in Equation 8 captures any possible breaks in both the level series and the trend, it is a better way of determining structural breaks.

Cointegration Analysis

The second step in intertemporal modeling of the sustainability of CAD is the cointegration analysis. The Johansen multivariate cointegration procedure has advantages over the other methods. It is well known that the Johansen procedure does not suffer from a normalization problem and is robust to departures from normality (Gonzalo, 1994). The determination of the number of cointegrating vectors is based on the use of two test statistics, namely the trace test and the maximum eigenvalue test. The comparison of test statistics with the critical values shows the presence of any cointegrating relations. Johansen cointegration analysis requires the determination of lag length with an unrestricted VAR model.

Data

In this study, the sustainability of Turkish CAD in the post-crisis period is tested by using monthly data for the period 2002:01-2010-12. The variables used in the analysis are the Turkish exports and imports. The exports (EX) represent exports of goods and services. The imports (IM) are the sum of the imports of goods and services and net transfer payments with net interest payments. The data were obtained from Central Bank of the Republic of Turkey, Balance of Payments statistics. EViews 7.0 software was used in the analysis.

Figure 3 shows the plots of the level values for the variables EX and IM.

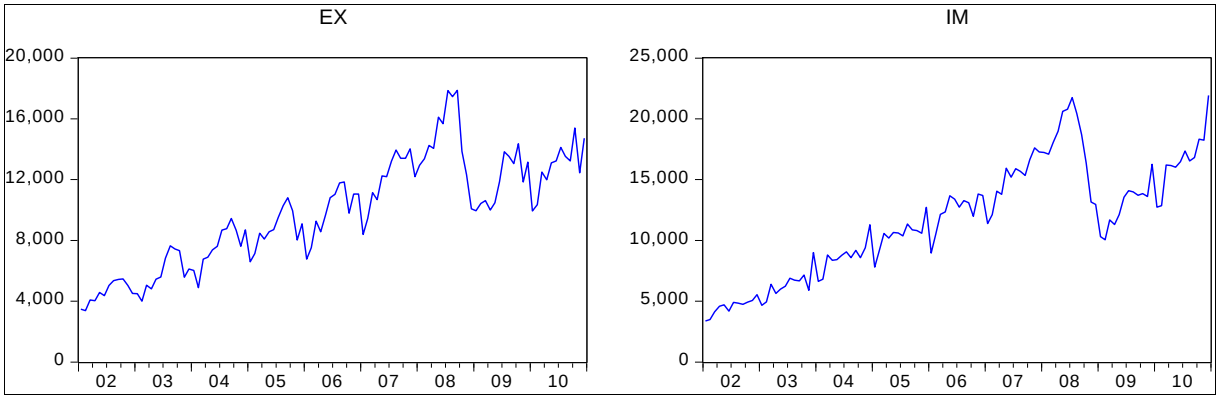


Figure 3: Level Data Graph

Before carrying out unit root tests with structural breaks, we also deseasonalized the EX data by using Tramo/Seats method (Gomez and Maraval, 1998). Plots for the logarithmic values of IM and the seasonally adjusted EX are given in Figure 4.

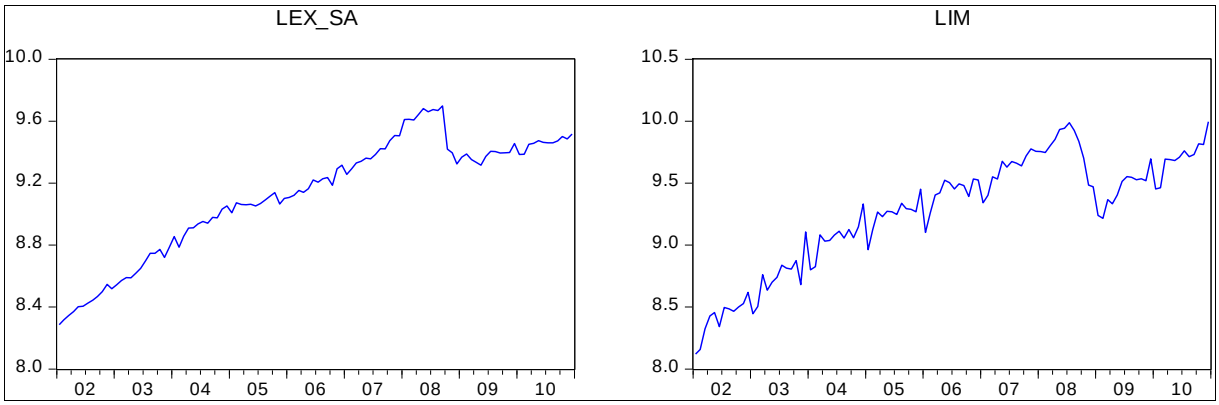


Figure 4: Seasonally Adjusted Log Series Graph

In Figure 4, it is clear that there is a structural break in data corresponding to the global financial crises started in late 2007 in the US. The traditional unit root tests are neglecting the structural breaks in data such as ADF and PP tests; since they are not reliable, we use ZA test developed by Zivot and Andrews (1992). Table 3 gives the results of ZA test based on the model C given in Equation 8.

Table 3: ZA Test Results

	LEX_SA	LIM
TB	2008:10	2008:11
c	3.274832 (7.035510)*	5.082920 (5.461648)*
α	-0.389253 (-6.993070)*	-0.601225 (-5.407737)*
β	0.006237 (6.808310)*	0.011160 (5.063882)*
γ	-0.170040 (-7.868054)*	-0.444817 (-5.811991)*
θ	-0.002141 (-1.863124)	0.005025 (1.759221)
k	0	3
**The number in parentheses are t-statistics; and (*) denotes the significance of the corresponding coefficients at 1%, 5% and 10%. **k represents the lag length.		

ZA test results confirm the structural break in 2008 indicated by raw data in Figure 2 which is in October 2008, the date of the global financial crises starting to hit Turkish economy, for LEX_SA; and November 2008 for LIM. Since α, β and γ coefficients are statistically significant, the null hypothesis of non-stationarity is

rejected. Therefore, we conclude that both series are stationary in their first differences, which unveils an $I(1)$ process. With this conclusion, we show that the first condition (weak form) of sustainability requiring first degree integration for each variable is satisfied.

As stated above, the intertemporal approach requires the cointegration relationship between LEX_SA and LIM. After establishing that both variables are first difference stationary, we next test the existence of cointegration between these two variables by using Johansen cointegration method. To do this, we first determine optimal lag length as 1 based on the AIC, SIC and HQ criteria. Table 4 gives the results of Johansen cointegration test.

Table 4: Johansen Cointegration Test Results

Null Hypothesis	Max-Eigen Stat.	5% Critical Value	Prob.	Trace Stat.	5% Critical Value	Prob.
r = 0	20.88459*	14.26460	0.0039	26.49840*	15.49471	0.0008
r ≤ 1	5.613805*	3.841466	0.0178	5.613805*	3.841466	0.0178
r shows the number of cointegrating vectors. * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values						

The results of Johansen cointegration test indicate that there is a long-run relationship between exports and imports for Turkey in the sample period. The coefficients of the cointegrating vector are given in Table 5.

Table 5: Normalized Cointegrating Coefficients and Adjustment Coefficients

	LEX_SA	LIM
Normalized Cointegrating Coefficients	1.000000	-0.842355
		(0.03277)
Adjustment Coefficients	D(LEX_SA)	D(LIM)
	-0.054366 (0.06335)	0.549541 (0.15601)

Since we found a cointegration relation between EX an IM with the estimated value of β coefficient, 0.842355; we can conclude the CAD of Turkey may not be sustainable in the long-run because of faster rise in the Turkish imports relative to the exports. In other words, based on the results of Johansen cointegration analysis, we can argue that the sustainability of the Turkish CAD is weak.

Conclusion

CAD is one of the most important sources of external fragility in Turkey with an amount of approximately 30 billion US Dollars in the first quarter of 2011. Along with its tremendous amount, Turkey is mainly relying on short term speculative money flows in financing the CAD. This also raises a lot of concerns and questions about the sustainability of CAD in the long-run.

The results of the Johansen cointegration analysis on intertemporal balance model indicate that there is a weak evidence for

sustainability of CAD in Turkey for the post-crisis period. This finding should be taken seriously and the dynamics of development leading to large CAD should be evaluated carefully. Initially, it should be remembered that increasing trade deficits of Turkey which inevitably results from over-dependency of the industrial sector on imports increases CAD. Secondly, the way that Turkey finances its CAD, by speculative and short-term capital inflows, raises doubts about the sustainability of CAD. Third and most importantly, economic policies implemented after the 2001-crisis contributed in the appreciation of Turkish Lira, which causes a faster increase in imports compared to exports. At the same time, the inflow of speculative foreign capital further increased the value of the national currency and eventually led to a persistent and large CAD in Turkey.

Even though findings of the study indicates a weak evidence for the sustainability of CAD in Turkey, the lack of action to reduce persistent and large CAD may be considered as an indicator of worsening external balances with an increasing external fragility. Also, this may contribute to the perceptions of the forthcoming devastating financial crises in Turkey. Therefore, to reinforce the sustainability of CAD, there is an urgent need to implement some economic policies, such as supporting long-term capital flows, especially green field foreign direct investment, and equity portfolio flows; controlling the short-term speculative capital inflows (hot money flows) to the country by the use of some measures like Tobin tax, establishing a competitive national currency, and implementing new industrialization policies mainly aiming to develop export oriented high tech consumer products industry and reduce the import dependency of the industrial sector.

This study employed intertemporal budget constraint model to examine the sustainability of Turkish CAD after the financial crisis in 2001. Further studies are also needed to better understand the CAD structure of the country. In such, the composition of imports and exports and the effects of real exchange rates may also be analyzed in forthcoming studies.

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Appendix

Obs.	EX	IM	Obs.	EX	IM	Obs.	EX	IM
2002M01	3,470.00	3,365.00	**2005M01**	6,600.00	7,816.00	**2008M01**	12,942.00	17,234.00
2002M02	3,383.00	3,491.00	**2005M02**	7,138.00	9,179.00	**2008M02**	13,373.00	17,086.00
2002M03	4,078.00	4,120.00	**2005M03**	8,469.00	10,580.00	**2008M03**	14,241.00	18,059.00
2002M04	4,036.00	4,578.00	**2005M04**	8,087.00	10,185.00	**2008M04**	14,059.00	18,989.00
2002M05	4,570.00	4,701.00	**2005M05**	8,572.00	10,652.00	**2008M05**	16,114.00	20,612.00
2002M06	4,368.00	4,193.00	**2005M06**	8,708.00	10,608.00	**2008M06**	15,687.00	20,790.00
2002M07	5,035.00	4,894.00	**2005M07**	9,527.00	10,370.00	**2008M07**	17,852.00	21,743.00
2002M08	5,354.00	4,837.00	**2005M08**	10,285.00	11,350.00	**2008M08**	17,457.00	20,442.00
2002M09	5,437.00	4,751.00	**2005M09**	10,811.00	10,878.00	**2008M09**	17,883.00	18,712.00
2002M10	5,463.00	4,917.00	**2005M10**	9,946.00	10,809.00	**2008M10**	13,864.00	16,349.00
2002M11	5,042.00	5,052.00	**2005M11**	8,027.00	10,592.00	**2008M11**	12,326.00	13,149.00
2002M12	4,514.00	5,534.00	**2005M12**	9,093.00	12,719.00	**2008M12**	10,073.00	12,958.00
2003M01	4,495.00	4,655.00	**2006M01**	6,769.00	8,967.00	**2009M01**	9,958.00	10,303.00
2003M02	4,007.00	4,941.00	**2006M02**	7,522.00	10,513.00	**2009M02**	10,429.00	10,048.00
2003M03	5,055.00	6,386.00	**2006M03**	9,261.00	12,135.00	**2009M03**	10,622.00	11,684.00
2003M04	4,820.00	5,631.00	**2006M04**	8,569.00	12,345.00	**2009M04**	10,004.00	11,311.00
2003M05	5,447.00	6,006.00	**2006M05**	9,679.00	13,671.00	**2009M05**	10,479.00	12,128.00
2003M06	5,590.00	6,244.00	**2006M06**	10,810.00	13,399.00	**2009M06**	11,856.00	13,547.00
2003M07	6,828.00	6,892.00	**2006M07**	11,035.00	12,732.00	**2009M07**	13,827.00	14,090.00
2003M08	7,642.00	6,730.00	**2006M08**	11,782.00	13,276.00	**2009M08**	13,528.00	13,990.00
2003M09	7,432.00	6,677.00	**2006M09**	11,845.00	13,091.00	**2009M09**	13,057.00	13,717.00
2003M10	7,329.00	7,150.00	**2006M10**	9,793.00	11,983.00	**2009M10**	14,356.00	13,848.00
2003M11	5,578.00	5,893.00	**2006M11**	11,052.00	13,811.00	**2009M11**	11,853.00	13,609.00
2003M12	6,123.00	9,009.00	**2006M12**	11,045.00	13,701.00	**2009M12**	13,144.00	16,259.00
2004M01	6,030.00	6,639.00	**2007M01**	8,400.00	11,389.00	**2010M01**	9,932.00	12,742.00
2004M02	4,890.00	6,811.00	**2007M02**	9,451.00	12,114.00	**2010M02**	10,357.00	12,863.00
2004M03	6,772.00	8,798.00	**2007M03**	11,149.00	14,044.00	**2010M03**	12,492.00	16,208.00
2004M04	6,904.00	8,370.00	**2007M04**	10,680.00	13,798.00	**2010M04**	11,986.00	16,151.00
2004M05	7,379.00	8,417.00	**2007M05**	12,241.00	15,933.00	**2010M05**	13,110.00	16,011.00
2004M06	7,608.00	8,783.00	**2007M06**	12,200.00	15,207.00	**2010M06**	13,225.00	16,485.00
2004M07	8,684.00	9,064.00	**2007M07**	13,208.00	15,910.00	**2010M07**	14,128.00	17,347.00
2004M08	8,779.00	8,581.00	**2007M08**	13,940.00	15,677.00	**2010M08**	13,540.00	16,544.00
2004M09	9,450.00	9,186.00	**2007M09**	13,399.00	15,350.00	**2010M09**	13,235.00	16,822.00
2004M10	8,665.00	8,588.00	**2007M10**	13,399.00	16,637.00	**2010M10**	15,395.00	18,331.00
2004M11	7,621.00	9,388.00	**2007M11**	14,028.00	17,602.00	**2010M11**	12,456.00	18,238.00
2004M12	8,694.00	11,288.00	**2007M12**	12,196.00	17,275.00	**2010M12**	14,732.00	21,930.00